

Case 3094***Terebratula* Müller, 1776 (Brachiopoda): proposed designation of *Anomia terebratula* Linnaeus, 1758 as the type species**

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Abstract. The purpose of this application is to stabilise the current usage of the Miocene-Pliocene brachiopod genus *Terebratula* Müller, 1776. Lamarck (1799) gave *Anomia terebratula* Linnaeus, 1758 as the typical species of *Terebratula*, but this was not an originally included nominal species. It is proposed that *A. terebratula* be designated as the type species. Linnaeus based this species on a specimen figured by Colonna (1616); this specimen is now lost and a neotype from the type locality is designated.

Keywords. Nomenclature; taxonomy; Brachiopoda; Pliocene; brachiopods; *Terebratula*; *Terebratula terebratula*.

1. The nominal genus *Terebratula* was established by Müller (1776, p. 249) with three new species — *T. cranium*, *T. pubescens* and *T. nucleus* — none of which was given as the type species. The name *Terebratula* had been used in pre-Linnaean publications by Lhwyd (1699) and Klein (1753). Some 19th century authors have attributed *Terebratula* to Lhwyd (e.g. Davidson, 1853, p. 62) or to Klein (e.g. Douvillé, 1880, p. 264). Dall (1877, p. 70) was the first to accept Müller as the author.

2. The nominal species *Anomia terebratula* was described by Linnaeus (1758, p. 703). He provided no illustration but referred to figures in Colonna (1616), Lister (1678) and Klein (1753). Linnaeus's description reads: 'A. testa obovata laevi convexa: valvula altera triplicata, altera biplicata. — Column. purp. 22. f. 1. List. angl. 240 t. 8. f. 46. Klein ostr. t. 11. f. 74. Habitat ... fossilis. Natis alterius testae prominens pertusa est; extus plicae duae'. The Colonna figure referred to by Linnaeus is reproduced by Muir-Wood (1955, p. 3); the Klein figure is a copy of the same Colonna illustration, taken from a later (1675) edition of Colonna's work. Thus Linnaeus gave two separate references to the same Colonna illustration of a plicate Tertiary shell from Italy. The third figure mentioned by Linnaeus (Lister, 1678) is of a non-plicate Jurassic shell from England. Buckman (1907, p. 528) pointed out that Lister's figure did not agree with Linnaeus's description, and wrote that the Colonna-Klein figure 'must be taken as the holotype, which, in fact, has been the usual practice'.

3. Müller did not include *Anomia terebratula* Linnaeus as one of his original nominal species, but he raised the question of whether one of his three included species was the same taxon as that of the authors cited by Linnaeus ('3006. *Terebratula Cranium* testa laevi ventricosa, transversim subtiliter striata. Haec *Terebratula* auctorum, an vero Linnaei? valvulas enim nec bi-nec triplicatas invenio').

4. Lamarck (1799, p. 89) indicated *Anomia terebratula* Linnaeus as being the type, or at least the example, of *Terebratula* with the description 'Terebratule. *Terebratula*. Coq. inéquivalente [sic], se fixant par un ligament ou un tube court; la plus grande valve perforée ou échancrée à son crochet, qui est prominent, presque en forme de bec; charnière à deux dents. *Anomia terebratula*. Lin.'. However, this statement was not generally noted. Dall (1877, p. 70) wrote: '*Terebratula* O.F. Müller 1776 ... Müller cannot be said to have settled the type ... *T. vitrea*, Lam., and *T. perovalis*, Sow., are generally accepted as the types of the genus as now restricted'. Douvillé (1880) was the first person after Lamarck to state unequivocally, though invalidly, that the type species of *Terebratula* was '*Terebratula terebratula*, Linné sp.'. The species is not fixed by tautonymy since it was not originally included by Müller. Hall & Clarke (1894, p. 875) commented that *Anomia terebratula* 'is a fossil from the Mesozoic or Tertiary formations, though its geological horizon is not more precisely known'. They reproduced the Colonna-Klein figure, assigning it the name '*Terebratula simplex*'. Schuchert (1900, p. 329) wrote '*Terebratula*, Klein, 1753. Genus not well known. Mesozoic or Tertiary', and appended a figure labelled '*Terebratula Phillipsi*. Morris'. Since none of the authors mentioned above gave one of Müller's originally included species as the type, no valid designation has been made.

5. In an attempt to resolve the confusion surrounding *Terebratula terebratula* (Linnaeus), Buckman (1907, p. 529, pl. 12) selected and figured a specimen from the collections of the British Museum (Natural History) from Monte Mario, a Pliocene locality near Rome (about 350 km from the actual type locality near Andria), and described this as *T. terebratula* (Linnaeus). He did not formally designate this specimen, 'which might almost be the original drawn by Colonna, so like is it to his figure', as a neotype (i.e. type specimen), but regarded it as a reference specimen for future workers. This specimen, figured by Muir-Wood in the *Treatise on Invertebrate Paleontology* (1965, fig. 635.1a-c), is somewhat deformed by crushing, which has accentuated the similarity to the Colonna illustration. Muir-Wood noted that a case for ratification of *Anomia terebratula* as the type species for *Terebratula* should be submitted to the Commission, but this has not been done until now. Brunton, Cocks & Dance (1967, p. 174) noted that none of the brachiopod specimens recorded as *Anomia terebratula* remaining in the Linnean collections was the same as the Colonna figure mentioned by Linnaeus; they suggested that the specimen figured by Buckman should be designated as neotype, but noted that this would require a Commission ruling since the localities were not the same.

6. Until the present study, no attempt seems to have been made either to find the specimen illustrated by Colonna or to collect topotypes from his type locality. Colonna's specimen may have been held in Naples, but we have been unable to locate it and conclude that it is lost. Colonna (1616, p. 23) gave considerable detail on the type locality of his specimen(s) of 'Concha anomia', from (in translation) 'tuffaceous concretions in the small valley or ditch a little below the Church of Our Lady of Andria which is situated a mile outside the city' of Andria, Italy. In 1993 and 1998,

Dr Massimo Caldera and Dr Oronzo Simone from the Dipartimento di Geologia e Geofisica at Bari, Italy, collected a number of specimens of *Terebratula* from the 'tophacea concrezione' (Calcarenite di Gravina Formation) situated near the church of St Maria di Andria as described by Colonna (latitude 41° 13' 52" N; longitude 16° 16' 00" E). The age of this calcarenite is almost certainly Pliocene, and thus the age of the type locality and of the type specimen of *Terebratula terebratula* is established as Pliocene. A detailed account of the rediscovery of the type locality will be presented elsewhere (Lee, Caldera & Simone, in preparation). We hereby designate as neotype of *Anomia terebratula* Linnaeus an undeformed, although incomplete, specimen from this locality numbered BM(NH) BG152 in the collections of the Natural History Museum, London.

7. The International Commission on Zoological Nomenclature is accordingly asked:

- (1) to use its plenary powers to set aside all previous fixations of type species for the nominal genus *Terebratula* Müller, 1776 and to designate *Anomia terebratula* Linnaeus, 1758 as the type species;
- (2) to place on the Official List of Generic Names in Zoology the name *Terebratula* Müller, 1776 (gender: feminine), type species by designation in (1) above *Anomia terebratula* Linnaeus, 1758;
- (3) to place on the Official List of Specific Names in Zoology the name *terebratula* Linnaeus, 1758, as published in the binomen *Anomia terebratula* and as defined by the neotype designated by Lee & Brunton in para. 6 above (specific name of the type species of *Terebratula* Müller, 1776).

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References

- Brunton, C.H.C., Cocks, L.R.M. & Dance, S.P. 1967. Brachiopods in the Linnaean collection. *Proceedings of the Linnean Society of London*, **178**: 161–183.
- Buckman, S.S. 1907. Brachiopod nomenclature: the genotype of *Terebratula*. *Annals and Magazine of Natural History*, (7)**19**: 525–531.
- Colonna, F. 1616. *Purpura. Hoc est de purpura ab animali testaceo fusa, de hoc ipso animali, aliisquibus rarioribus testaceis quibusdam*. iv, 42 pp., 2 pls. Romae.
- Colonna, F. 1675. *Opusculum de purpura ... iterum luci datum opera ac studio J.D. Majoris ... cuius ... accesserunt annotationes quaedam. (Doctrinae de testaceis, in ordinem congruum redactae specimen, tabulis aliquat comprehensum ... cum brevi dictionario ostracologico, de partibus testaceorum, autore J. D. M. Med.D. xii, 72 pp. Kiliae.*
- Dall, W.H. 1877. Index to the names which have been applied to the subdivisions of the Class Brachiopoda. *Bulletin of the United States National Museum*, **8**: 3–88.
- Davidson, T. 1853. British fossil Brachiopoda. Chapter 3. On the classification of the Brachiopoda. *Palaeontographical Society (Monograph)*, **1**: 41–136.

- Douvillé, H.** 1880. Note sur quelques genres de brachiopodes (Terebratulidae et Waldheimiidae). *Bulletin de la Société Géologique de France*, (3)7: 251–277.
- Hall, J. & Clarke, J.M.** 1894. Introduction to the study of the Brachiopoda. Pp. 751–943 in: *13th annual report of the New York State Geologist for the year 1893. Palaeontology*, part 2. Albany.
- Klein, J.T.** 1753. *J.T. Klein tentamen methodi ostracologicae, sive dispositio naturalis cochlidum et concharum*. 177 pp., 12 pls. Lugduni Batavorum.
- Lamarck, J.B.P.A. de M.** 1799. Prodrome d'une nouvelle classification des coquilles. *Mémoires de la Société d'Histoire Naturelle de Paris*, I: 63–91.
- Lhwyd, E.** 1699. *Lithophylacii Britannici ichnographia, sive Lapidum aliorumq; fossilium Britannicorum singulari figura insignium*. 145 pp., 17 pls. Londini & Lipsiae.
- Linnaeus, C.** 1758. *Systema Naturae*, Ed. 10, vol. 1. 824 pp. Salvii, Holmiae.
- Lister, M.** 1678. *Historia Animalium Angliae ... de lapidibus ejusdem insulae ad cochlearum quantum imaginem figuratis*. vi, 250 pp., 9 pls. Londini.
- Muir-Wood, H.M.** 1955. *History of the classification of the Phylum Brachiopoda*. 124 pp. British Museum (Natural History), London.
- Muir-Wood, H.M.** 1965. Mesozoic and Cenozoic Terebratulidina. Pp. 762–816 in Moore, R.C. (Ed.), *Treatise on Invertebrate Paleontology*, Part H, Brachiopoda, vol. 2. Geological Society of America and University of Kansas Press, Lawrence.
- Müller, O.F.** 1776. *Zoologiae Danicae prodromus seu animalium Daniae et Narvegiae indigenarum characteres, nomina, et synonyma imprimis popularium*. xxxii, 282 pp. Havniae.
- Schuchert, C.** 1900. In Zittel, K.A. *Textbook of Palaeontology* (translated Eastman, C.R.), vol. 1. 706 pp., 1476 text-figs. Macmillan, London.

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